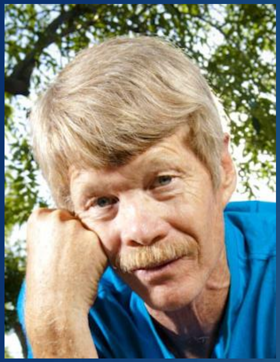
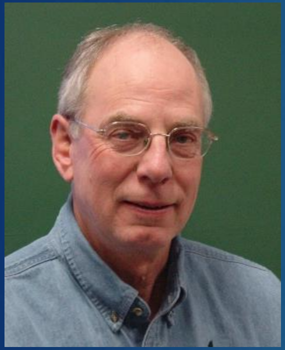


Keeping your School Free of Stinging Insects

CENTER OF EXPERTISE FOR SCHOOL IPM

Presenters







Justin O. Schmidt –

- Southwestern Biological Institute and University of Arizona, Tucson.
- Investigates biology, medical importance, and impact of bees, wasps and ants on people and structures.
- B.S. - Penn State, M.S. – Univ. British Columbia, PhD – Univ. Georgia, post-doc – Univ. New Brunswick.
- Over 185 publications, 20 book chapters, two books.

Lynn Braband

- Senior Extension Associate for the NY State Community IPM program at Cornell Univ. B. S and MS, both from Iowa State University. Certified Wildlife Biologist®.
- Major responsibility to assist NY schools and municipalities in IPM implementation.
- Extension and other publications in school IPM, wildlife damage management, and environmental ethics.
- Previously - vice president and franchise owner/manager of Critter Control, Inc.

Mark Hardin

- IPM Specialist for Howard Co. Maryland Public School System.
- 20 years practiced IPM in museums, public gardens, schools, and zoos.
- Previously - Entomologist and IPM Coordinator for Smithsonian Institution
- Founder of Landscape IPM Educators and Professionals,
- Authored numerous scientific publications.





School Integrated Pest Management webinar on Stinging insects:

STINGING INSECTS AND SCHOOLS

Justin O. Schmidt
Southwestern Biological Institute &
Department of Entomology
University of Arizona

EPA Webinar
19 May 2015

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POINTS TO CONSIDER

- Stinging insects are not out to "get you". They sting only in response to feeling threatened.
- With stinging insects their "bark is generally bigger than their bite". That is, the fear they generate is larger than the actual risk.
- Calm and cool is the best response.

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Honey Bees

Honey bees visit flowers to collect nectar and pollen for their food


Mesquite flower


Indigo-bush (*Dalea* sp.)

Hence, they are frequently seen around school playgrounds and gardens.

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Honey bees live in large colonies called hives

- Hives are present throughout the year, but are most frequently noticed in Spring and Summer when both bees and people are active
- Feral hives are almost always in a cavity of a wall, building, tree, or other hollow object
- Usually a feral hive is indicated by a stream of bees flying into and out of a hole
- Another indication is someone got stung

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Feral (or wild) hives













Honey bees reproduce by swarming

During which thousands of bees and a queen leave the hive in search of a new home.



The swarm temporarily settles in a cluster







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When & where swarms are found

- Swarms are most common in April through June
- Swarms are most frequently low in trees or bushes and the cluster can always seen
- Swarms also settle under eves of buildings; and, again, a large cluster is seen
- Rarely, swarms will settle high in trees or on unusual objects like fence posts

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In a few days the swarm cluster will fly to a permanent hive that might be unwanted



Wall of a building



Tree in a playground



Abandoned neighboring building

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KILLER BEES



They look no different than “ordinary” European honey bees

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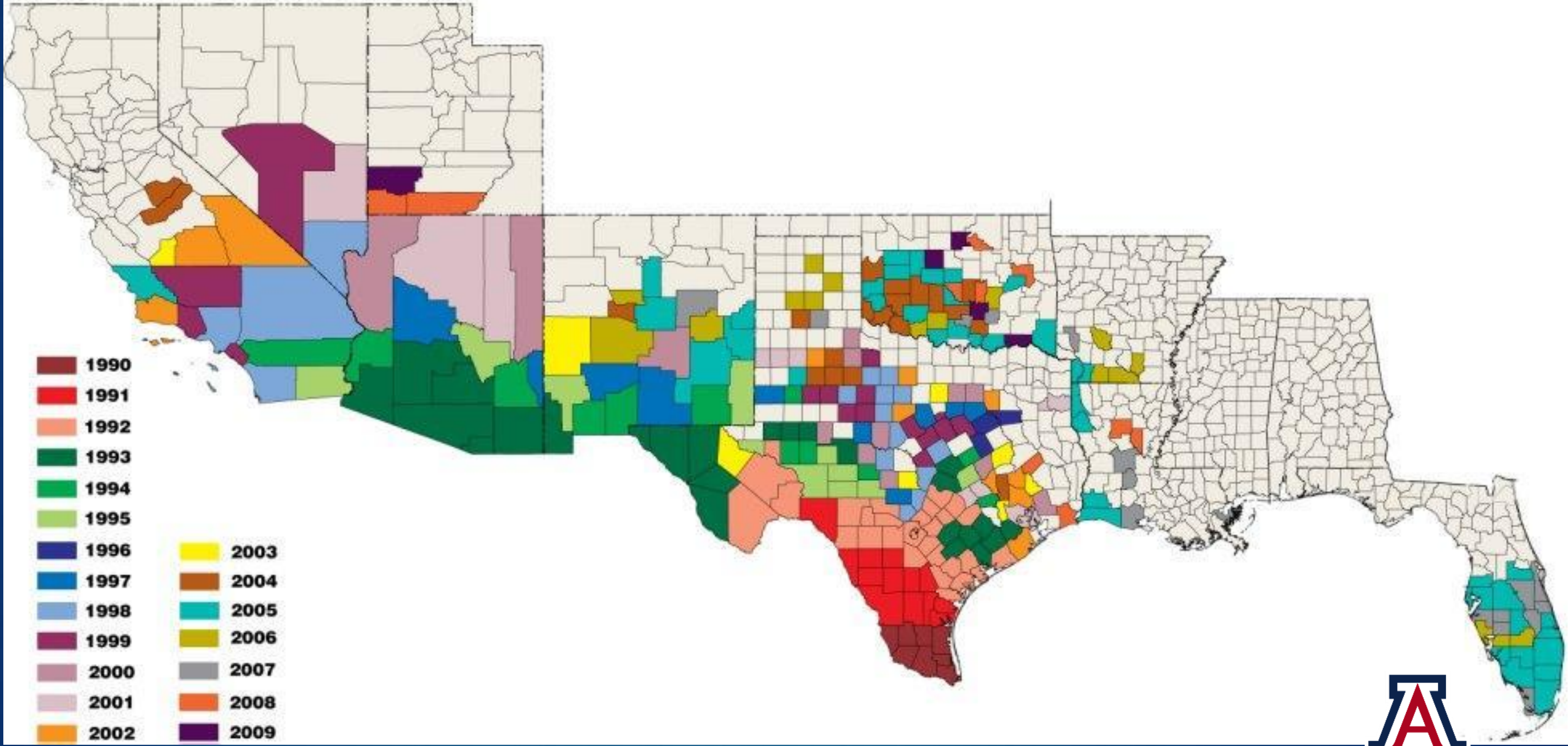
ARE THEY IN YOUR AREA OR STATE?



Spread of Africanized honey bees by year, by county

Updated July 2009

First found in southern Texas in 1990, Africanized honey bees are now found in much of the South.



MYTHS and VOODOO

MYTH:

Insect repellents

stop a bee attack





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NONSENSE!

While you are applying the spray, hundreds more bees are stinging







MYTH:

If you jump into water, you can escape attacking bees

NONSENSE!

When you stick your nose above water, more bees will attack and sting



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MYTH: I can’t run indoors – my grandson in inside



NONSENSE!

Most bees will fly to the windows, not sting





MYTH:

It is bad to pull out a stinger with fingers

"The best way to remove stings is to simply scrape them away with a fingernail, credit card or similar instrument. **Never pinch, tweeze or otherwise attempt to pull stings out**, as this will simply **inject the remaining contents of the venom sacs.**"

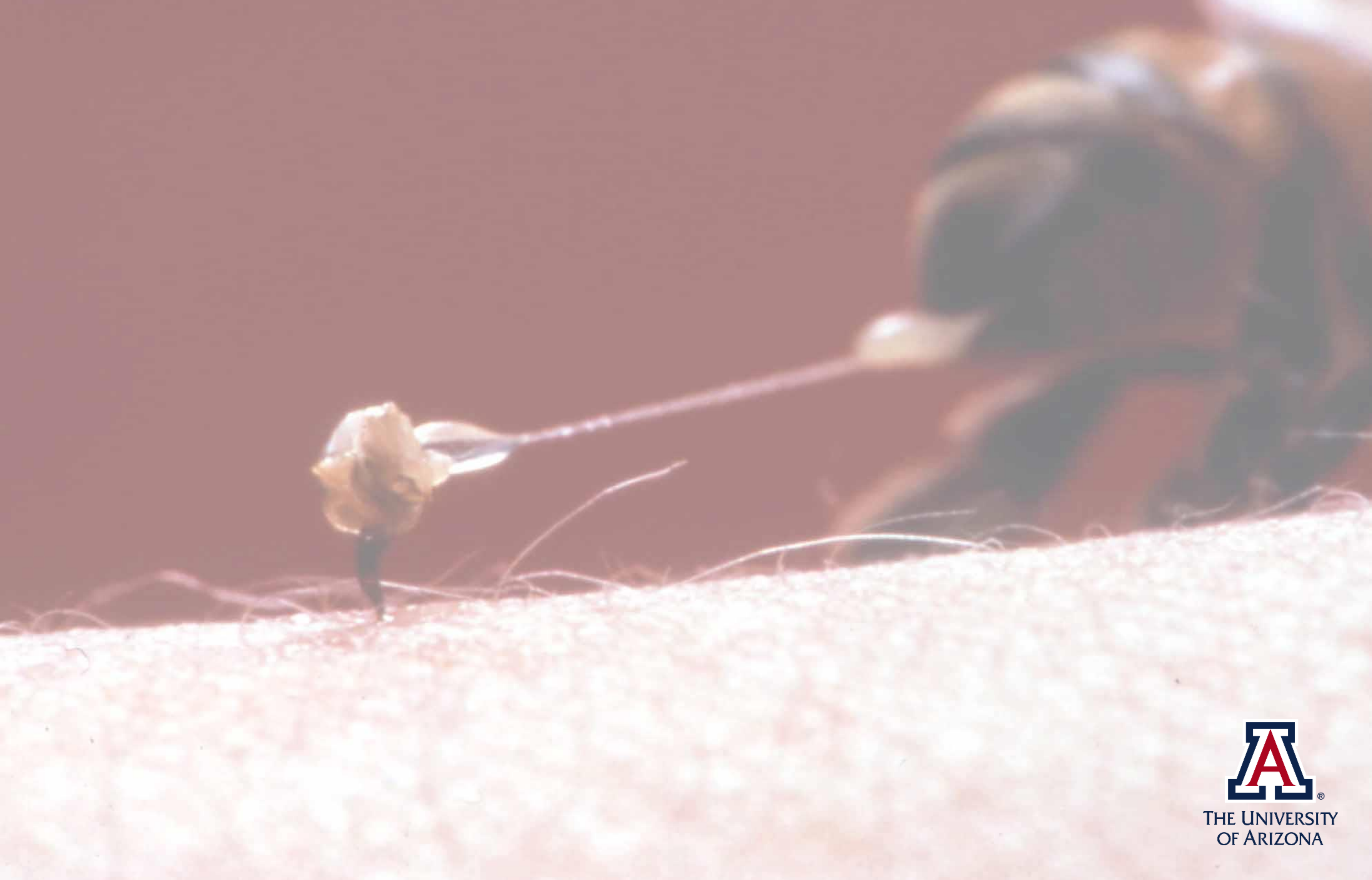
http://www.ars.usda.gov/Research/docs.htm?docid=11059&page=5 Modified: 2/24/2013

REALITY:

It doesn't matter how you get a stinger out – all that counts is how fast you get it out

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FIRST AID FOR BEE STINGS



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Home remedies, aka wives' tales

Baking soda
Vinegar
Meat tenderizer
Raw steak
Tobacco juice

Probably the best local treatment is a poultice of salt and water

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Keep the sting clean (do not scratch) and watch for signs of allergic reactions:

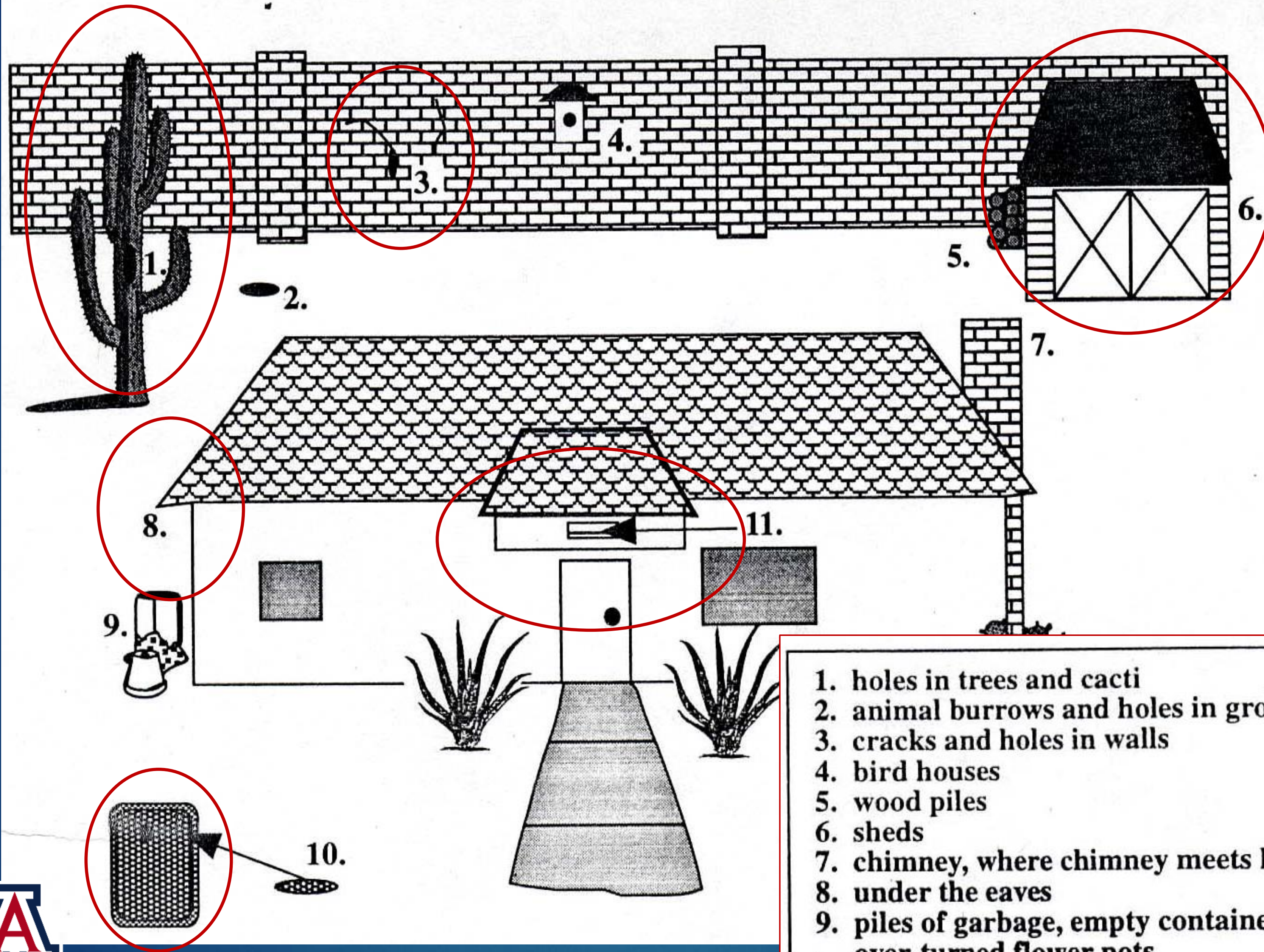
1) Difficulty in breathing or swallowing
2) Fainting or turning pale (low blood pressure)
3) Large swellings away from the sting site, often eyes, lips, neck, hands or feet (angioedema)
4) Red spots or rash, usually itches (urticaria)

If either of the first two symptoms, seek medical care quickly

If either of the second two symptoms, seek medical care when safe and convenient

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Places to check for honey bee nests



1. holes in trees and cacti
2. animal burrows and holes in ground
3. cracks and holes in walls
4. bird houses
5. wood piles
6. sheds
7. chimney, where chimney meets house
8. under the eaves
9. piles of garbage, empty containers over-turned flower pots
10. water meter and utility boxes
11. vents in roof, attic



Dealing with honey bee problems

- Honey bees will sting if their hive is disturbed, and their stings can cause allergy.
- If a hive or swarm is discovered, cordon off the area to prevent people from getting too close.
- Elimination should be done by trained professionals. Bee hives are dangerous, not like paper wasp nests, and not "do it yourself" operations.

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OTHER STINGING INSECTS AROUND SCHOOLS

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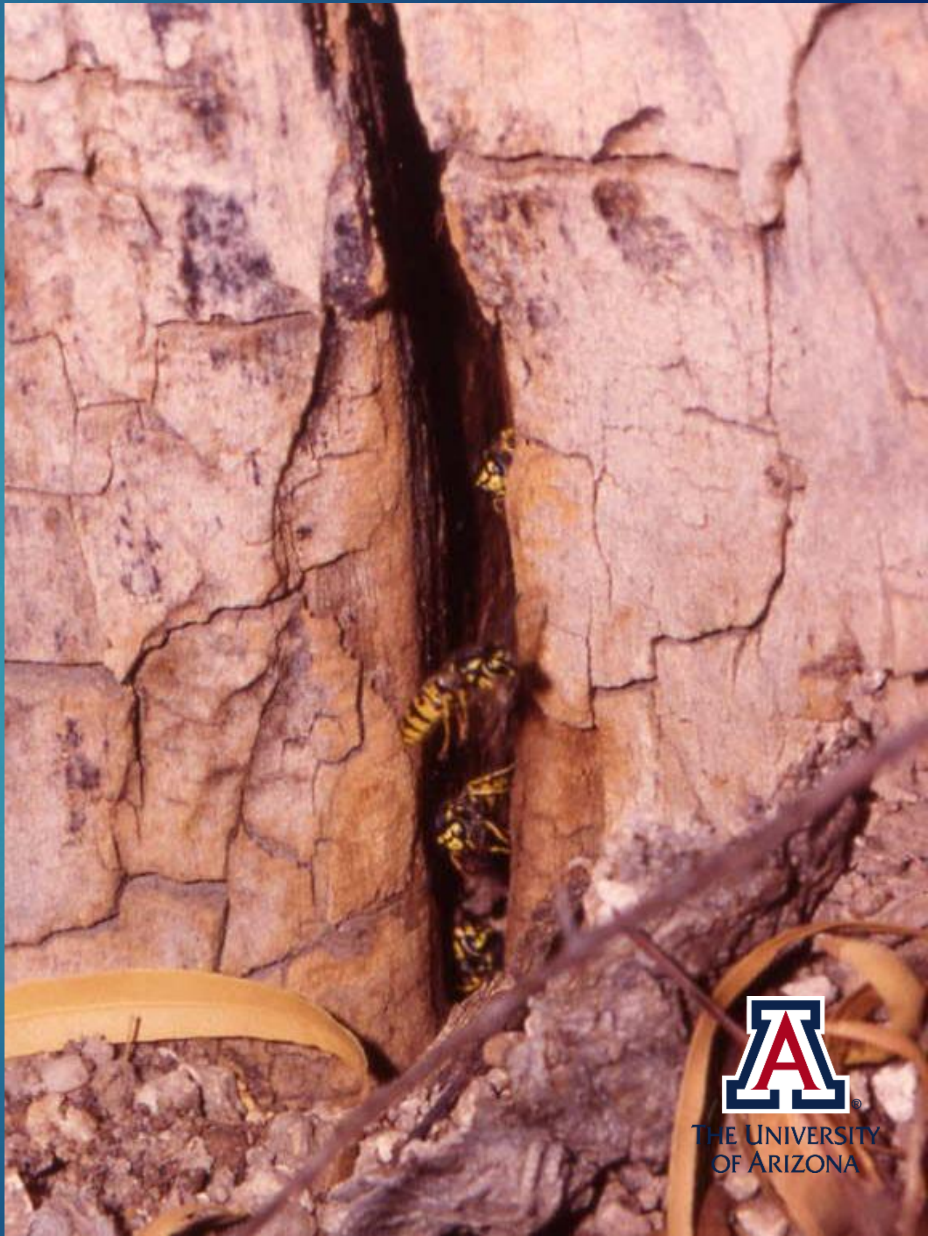
Yellowjackets and Baldfaced Hornets



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Yellowjacket nests







Aerial yellowjacket nest



baldfaced hornet & nest



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Yellowjackets

- Yellowjackets are NOT bees.
- Most active from August through October.
- Large colonies up to about 3000 wasps.
- Nests - in ground or attached to buildings.
- Will sting if nests are disturbed.
- Stings are a major source of sting allergy.
- Colonies die in winter.
- Elimination - by trained professionals.

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Paper Wasps





Paper wasps

- Most active in summer.
- Overwintering adults can be seen in houses on warm winter days.
- Will sting if nests are disturbed.
- Stings are a minor source of sting allergy.
- Nests are abandoned in winter.
- Nest destruction with water jet / hose.

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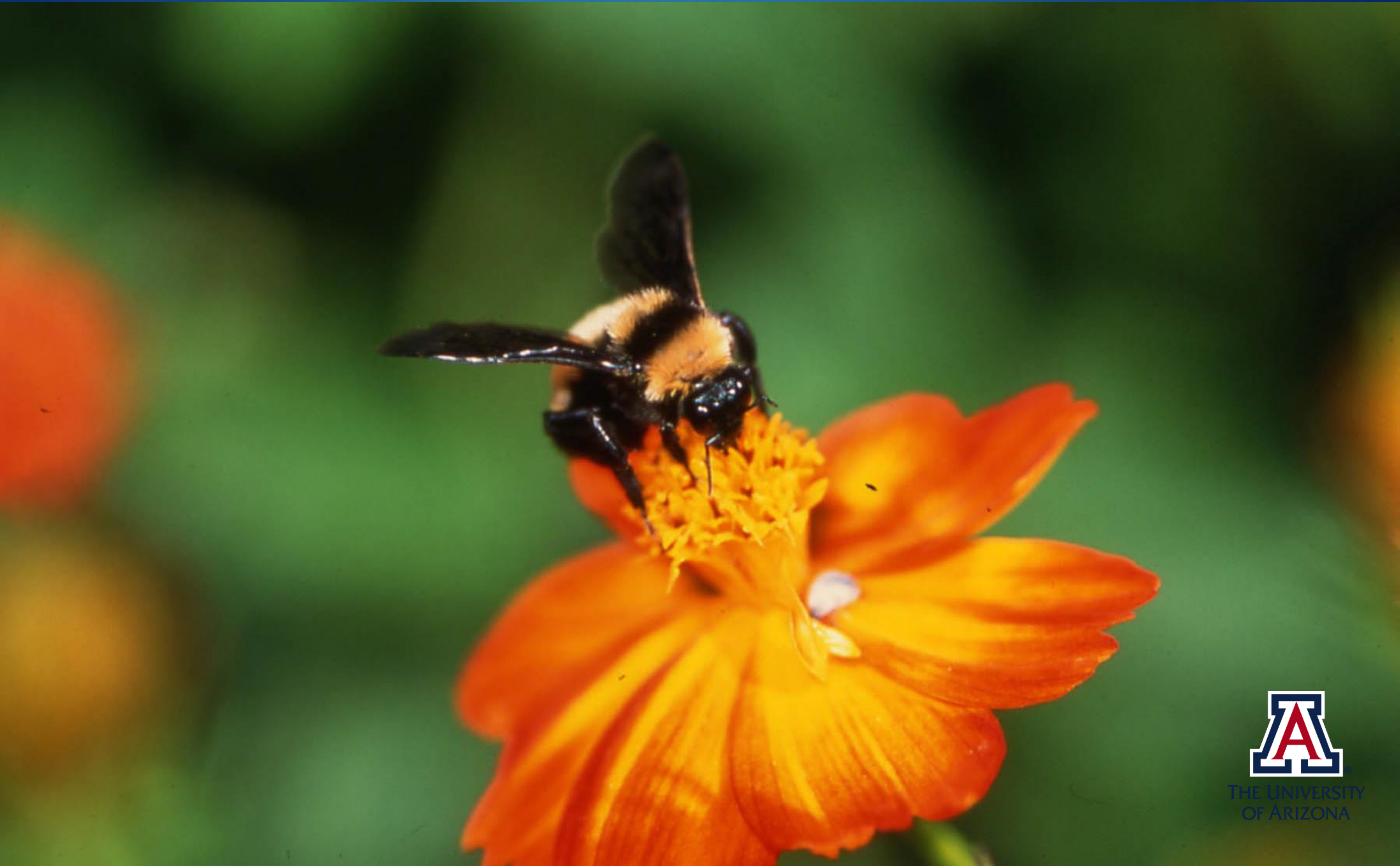




Paper wasp nests and forager at water

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Bumble Bees



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OF ARIZONA

Bumble Bees

- Live in small colonies of 50-500 bees
- Typically nest in old rodent nests.
- Colony lives only one summer.





Bumble Bees

- Generally docile
- Will defend their nests if disturbed
- They are not killer bees
- Not a risk if left alone
- Beneficial pollinators

Watch and enjoy them and show them to kids, friends, and neighbors.

If they need to be removed, removal should be done by trained professionals.

The University of Arizona

Carpenter Bees





Carpenter Bees

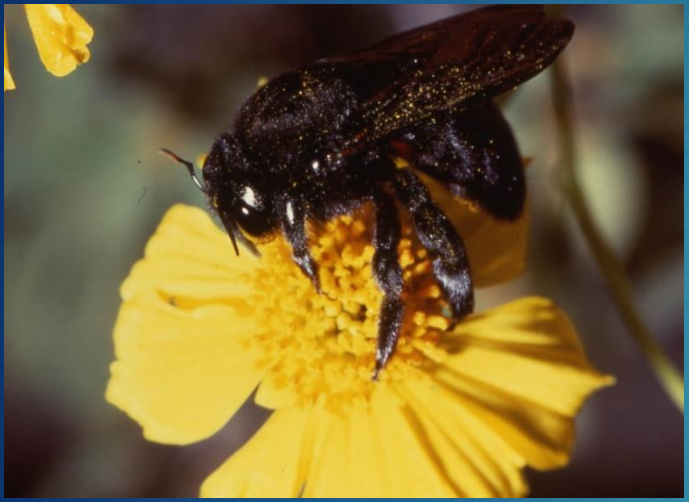
- **Large harmless bees.**
- **Very beneficial by pollinators.**
- **They do not sting!!**

I recommend watching and enjoying them and showing them to others and describing how beneficial they are.

Plugging entrance holes and painting discourage nesting.

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Most carpenter bees are shiny black, but some males are large fuzzy “flying teddy bears”







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Carpenter bees dig big holes in soft wood or agave stems and rear their young in cells



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Digger bees

- Large harmless native bees that pollinate cacti and other flowers.
- Nest in aggregations vary from year to year
- Active in late March – Summer.
- They do not sting.

Enjoy this once in a lifetime show.

Digger bees cannot be controlled and will go away permanently in a few weeks.

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Digger bees (*Centris sp.)*



Digger bees (*Diadasia* sp.)

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Massive nesting aggregations have as many as 20-30,000 bees





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Tarantula Hawks



Tarantula Hawks



- Solitary wasps.
- Paralyze tarantulas.
- Mainly in the West.
- Most active in summer.
- Seen on warm days year round.
- Make no nests.
- Attract attention.
- They only sting when grabbed.
- Otherwise no threat.
- Should be left alone.
- Do not attack people.
- Elimination is not feasible.

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Cicada Killers



Cicada Killers



- Solitary wasps.
- Paralyze cicadas.
- Active June to August.
- Often nest in sandy soil.
- Resemble huge yellow jackets.
- Do not sting.
- Present no threat or problem.
- Just large and scary looking.

Should be left alone.

Should not be killed or harmed.


Picture Me™ Cute As Can Bee

Managing Stinging Insects on School Grounds
NYS Case Studies

Lynn Braband
NYS IPM Program of
Cornell University

Framework

- Prevention
- Assess (monitor)
- Least risk effective control options

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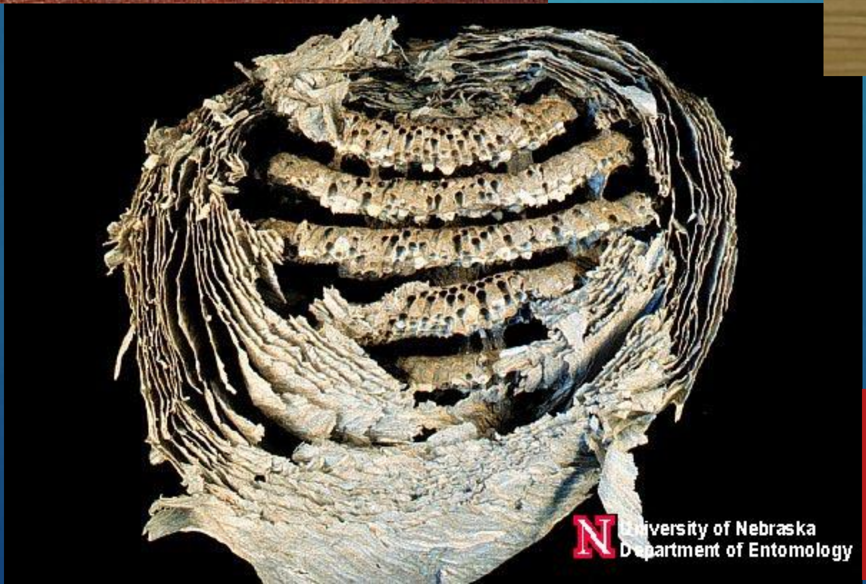
Species by Stinging Risks

- Paper nest building (social) wasps (high risk)
- Social bees (moderate risk)
- Solitary wasps & bees (low risk)

Social wasps: Yellowjackets







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Social wasps: Paper Wasps



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European Hornet



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Honey bee
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Bumblebees







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Carpenter bee



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“Ground” bee

Colletes thoracicus



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Solitary wasps: Cicada Killer



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Mud daubers



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BUILDING MAINTENANCE









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Reducing attractants



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NYS IPM Applied Work

- Vacuuming
- Proactive paper wasp management
- Yellowjacket nest removal/management
- Yellowjacket trapping
- Low risk species
- Techniques that did not work out for us

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Vacuuming exposed nests



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Vacuuming to remove void nests





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Inspections



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Use the sky as a backdrop to scout the perimeter of the roof for wasp activity
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Paper Wasp nest location



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Paper Wasp
nest location
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Paper Wasp nest location



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Paper Wasp nest location



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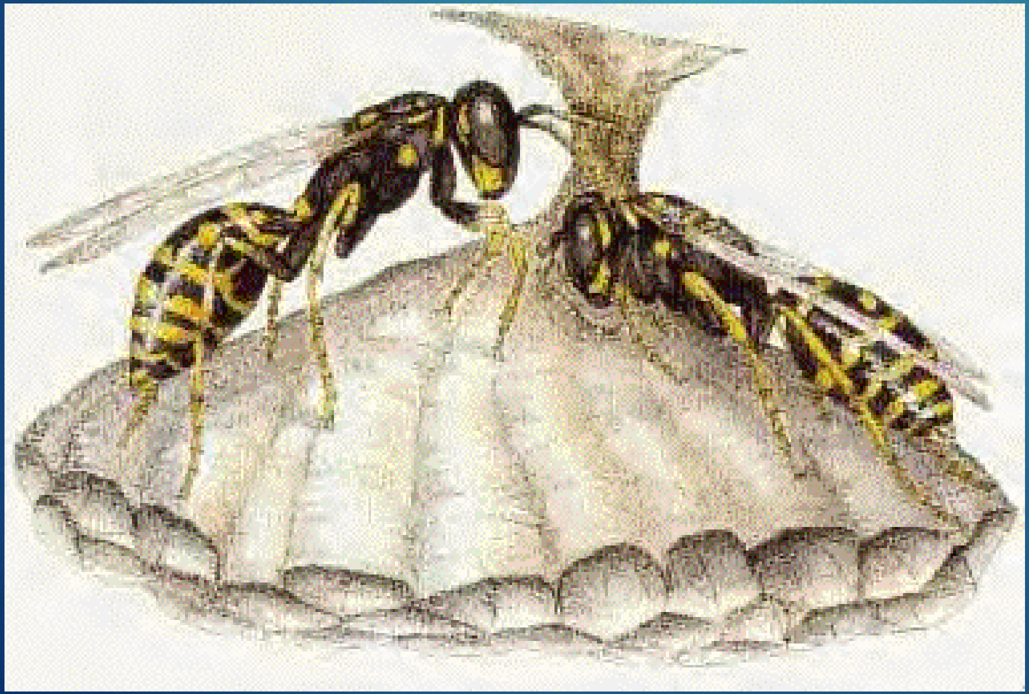
Physical nest removal



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Managing paper wasps

- If paper wasp nests are knocked down once every 2 weeks during May – July, nest building is greatly diminished.
- Quick aerosol in the early morning!



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Yellowjacket nest entrance





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Yellowjackets in structural voids

- Nests in hollow voids of foundation, wall, roof, and may be inaccessible
- Insecticide/pyrethroid dusts work well for voids, tracked into nest
- Never treat void from outside if risk of causing an indoor infestation
- Seal the entry once activity has ceased
- Vacuuming can buy some time if needed

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Yellowjackets in underground colonies

- Apply a pyrethrin/silica dust, or pyrethroid aerosol in the nest entrance, in the early AM
- Botanical insecticides
- Do not cover nest entrance, but rope it off from people

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Food-baited container traps



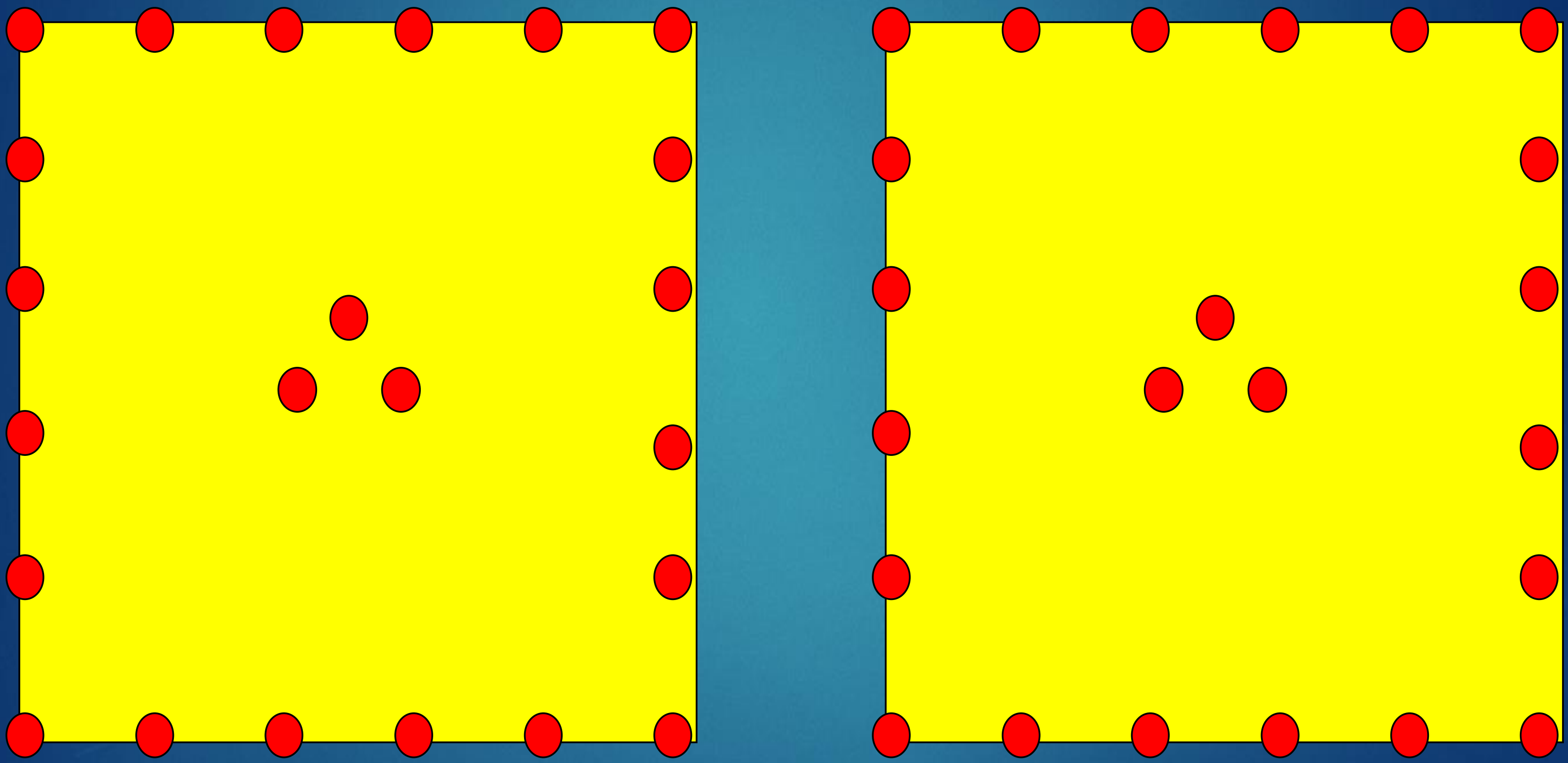
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Experimental testing of stinging risk reduction

- Assumption: fewer yellowjackets is associated with lower risk of being stung
- Study design: Paired plots of traps on poles

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Yellowjacket Trapping Plot Design



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Plot with peripheral trapping

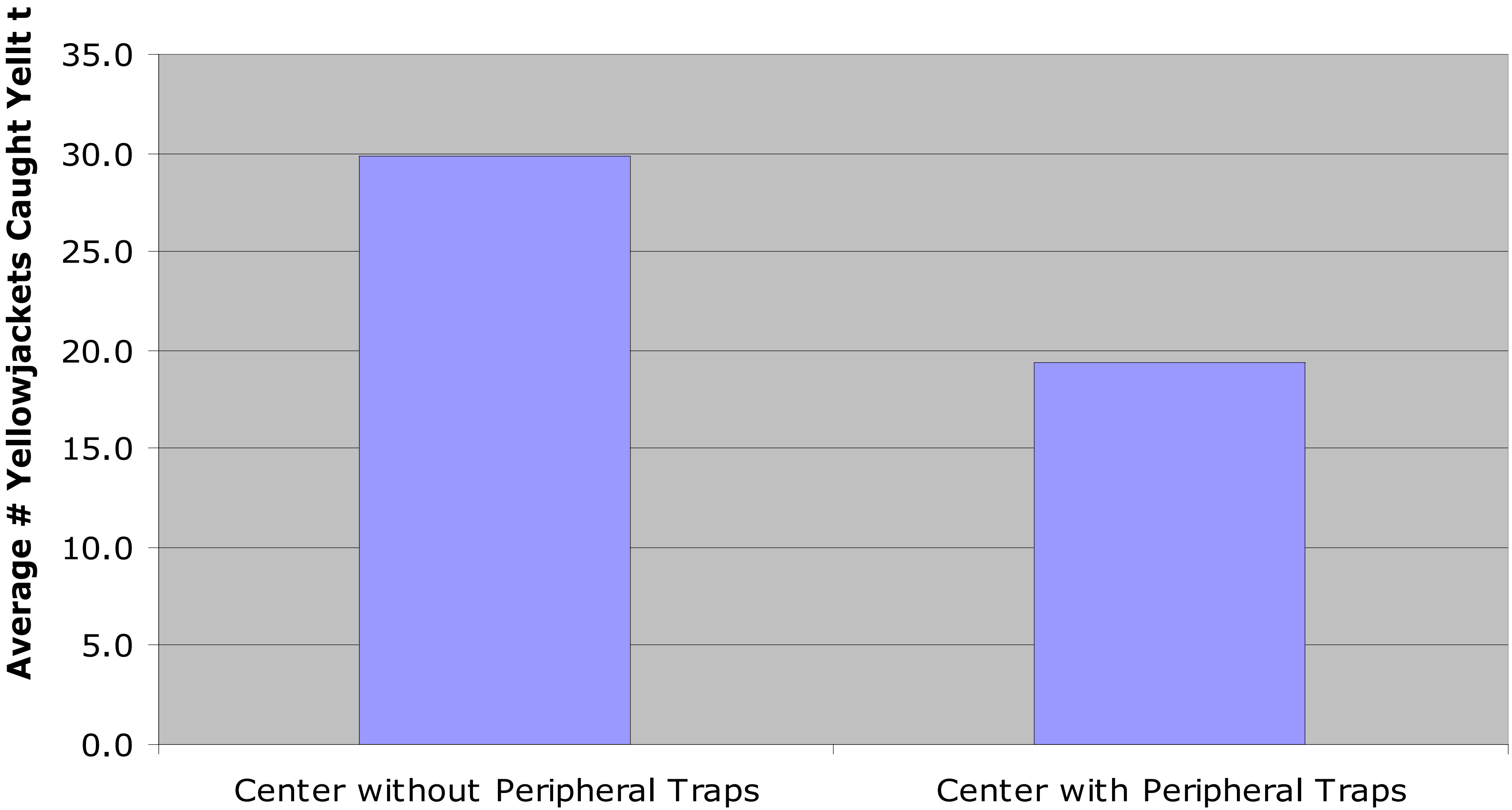


Plot without peripheral trapping

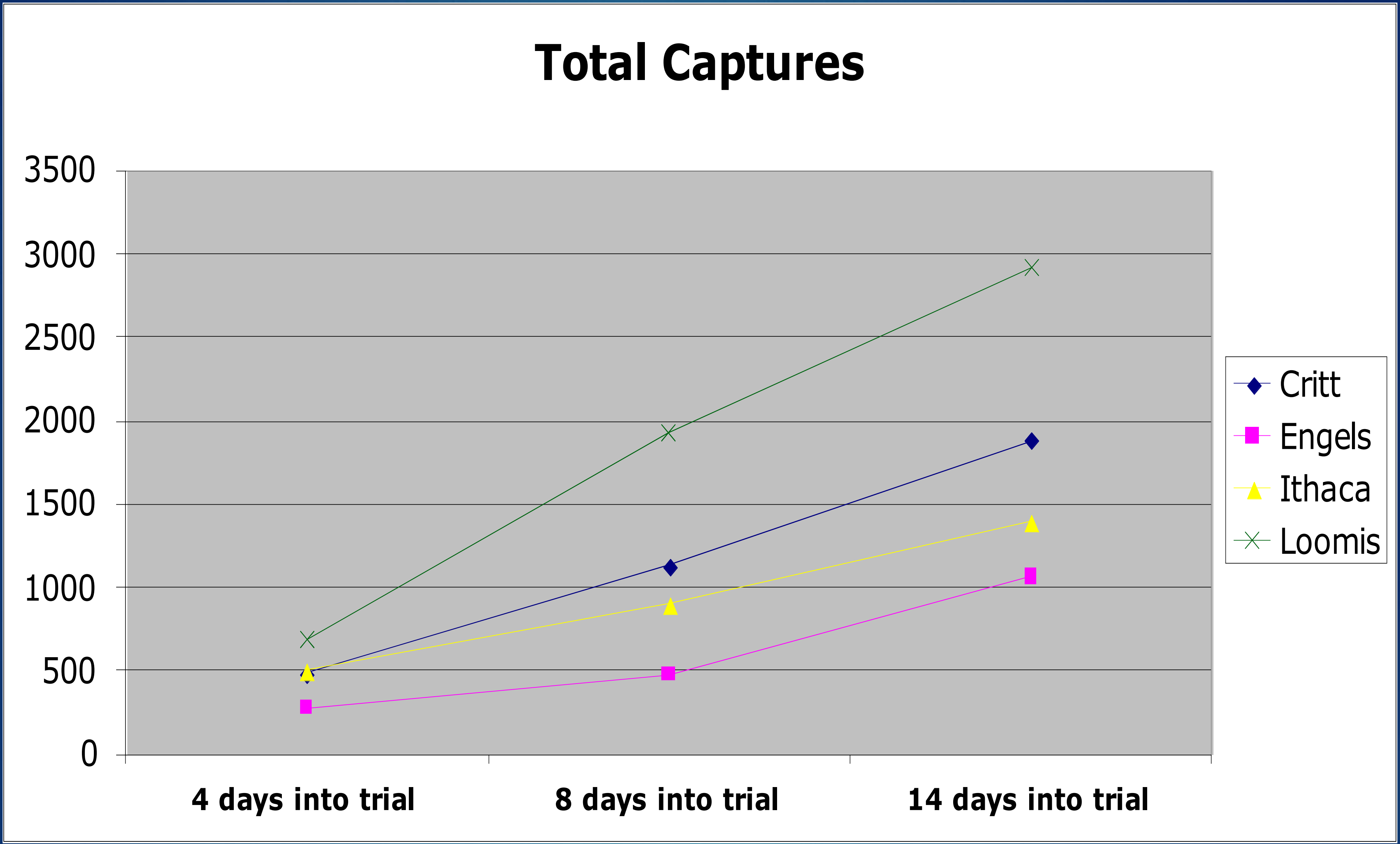


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Mean Averages for Center Traps, 2006



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CONCLUSIONS

- Best use: If there already exists a strong attractant (concession stands)
- Not recommended if no food attractant exists (school playgrounds)
- Distance from “protected” area probably important
- Festivals: start trapping one week before
- Traps need to be regularly serviced

Tips for trapping yellowjackets

- Target late season foraging for sweets
- Cheap fruit punch, orange soda are excellent baits
- Vaseline around inside rim of bait jars
- Keep traps at about 6 ft height
- Traps best located in sunny sites
- Reduce access to alternative food sources when beginning trapping

Carpenter Bee Damage



Cornell University Cooperative Extension

Solitary wasps & bees

Cicada Killer



Cornell University Cooperative Extension

Solitary wasps & bees



Ground bees



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Unique Control Options We've Tried….



- "Place a glass container over the entrance of a yellowjacket ground nest and they will starve…"

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Discouraging paper wasps

- In the Florida Keys people paint the undersides of their porches sky blue to trick wasps and prevent nest building.
- Well, we tried this…..

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Results: possibly some reduction but not enough to recommend.





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Integrated Pest management Target: Stinging Insects; paper wasps, wasps, hornets and bees

MARK R HARDIN
IPM SPECIALIST
HOWARD COUNTY PUBLIC SCHOOLS

IPM for Stinging Insects

- Identify the species involved
- Determine the risk based on species/location
- Seal up and out
- Educate about Risk and Treatment
- Trapping – Jar traps/Light traps
- Treat with pesticides – often dusts
- Determine management practices impacting abundance

How to get stung

- Swat them (in some species this may release attractant for more wasps) or threaten them
- Stand on their nest
- Have sweet things on your hands or body (cologne, perfumes, sweets from lunch – ice cream)
- Wear yellow
- Don’t move away when someone disturbs a nest (especially in the fall when there are more present)



- Non-chemical turf management will lead to an increase in clover and other flowering plants on school grounds and will then increase the stinging insects presence.

Mark Hardin Photo


Mark Hardin Photo

- The larvae may remain in a nest if you kill the adults and do not remove and destroy the nest and will then be a threat when they mature and emerge



Mark Hardin Photo

Yellow Jackets









- Digger Bees are one species that does not require treatment in most cases
- Cicada Killers are another group this is true for
- However, they may require the field be unusable for a period of time




Mark Hardin Photo

Nesting locations

- Find potential nesting sites before they nest

Most gaps we "provide" for paper wasp nesting (like hollow lettering on schools) some are unintentional(like the end of railings or support rods that are hollow)



Nesting locations




Mark Hardin Photo

Railings

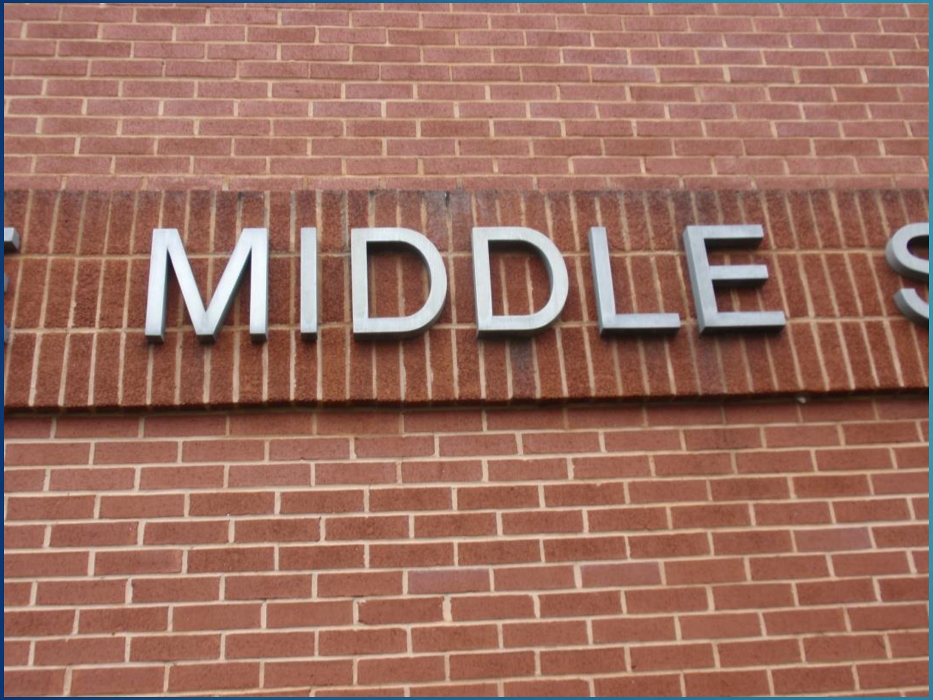




Any hollow object may be used







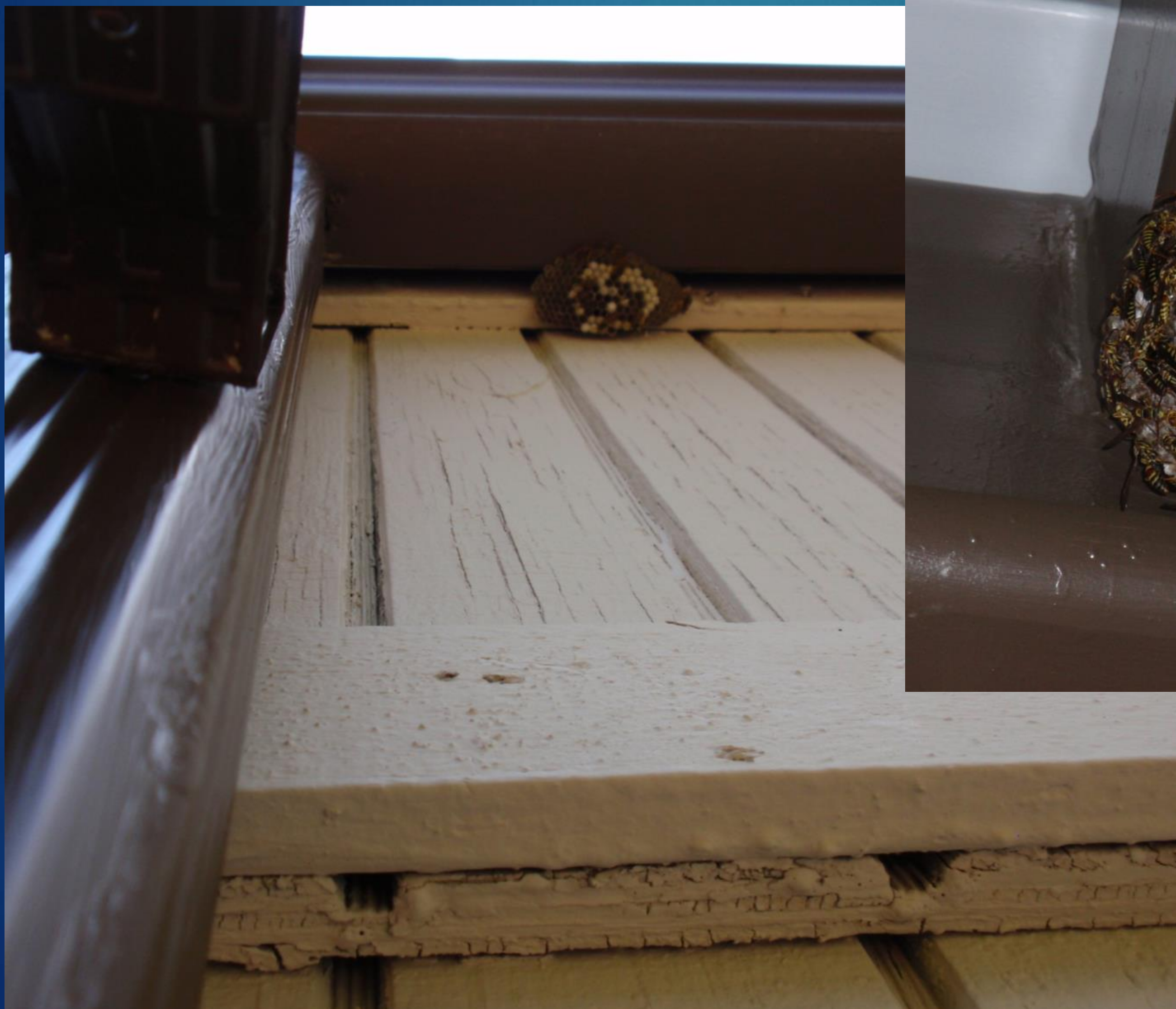
More school nesting locations







Eaves are a common nesting spot





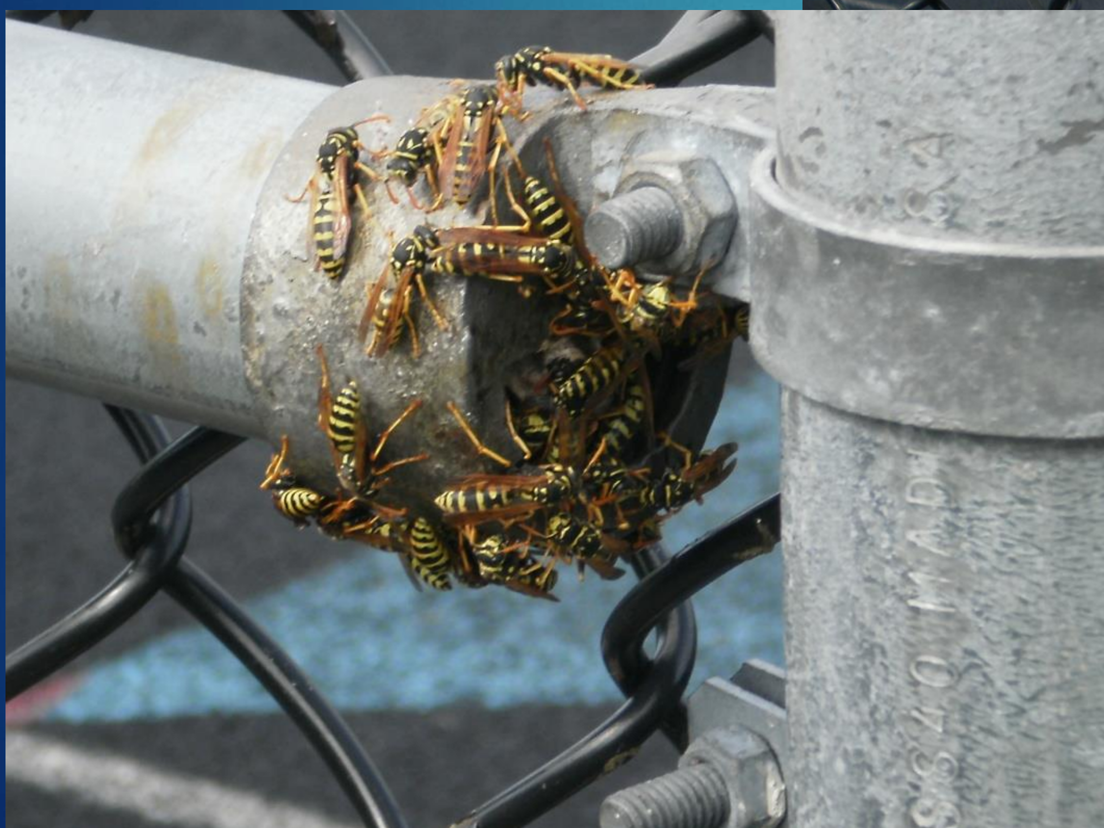
The risk for Paper wasps is not as great as for hornets (including yellow jackets) – nest size



Mark Hardin Photo

Chain link fences





Mark Hardin Photos

“Natural” locations may not require treatment

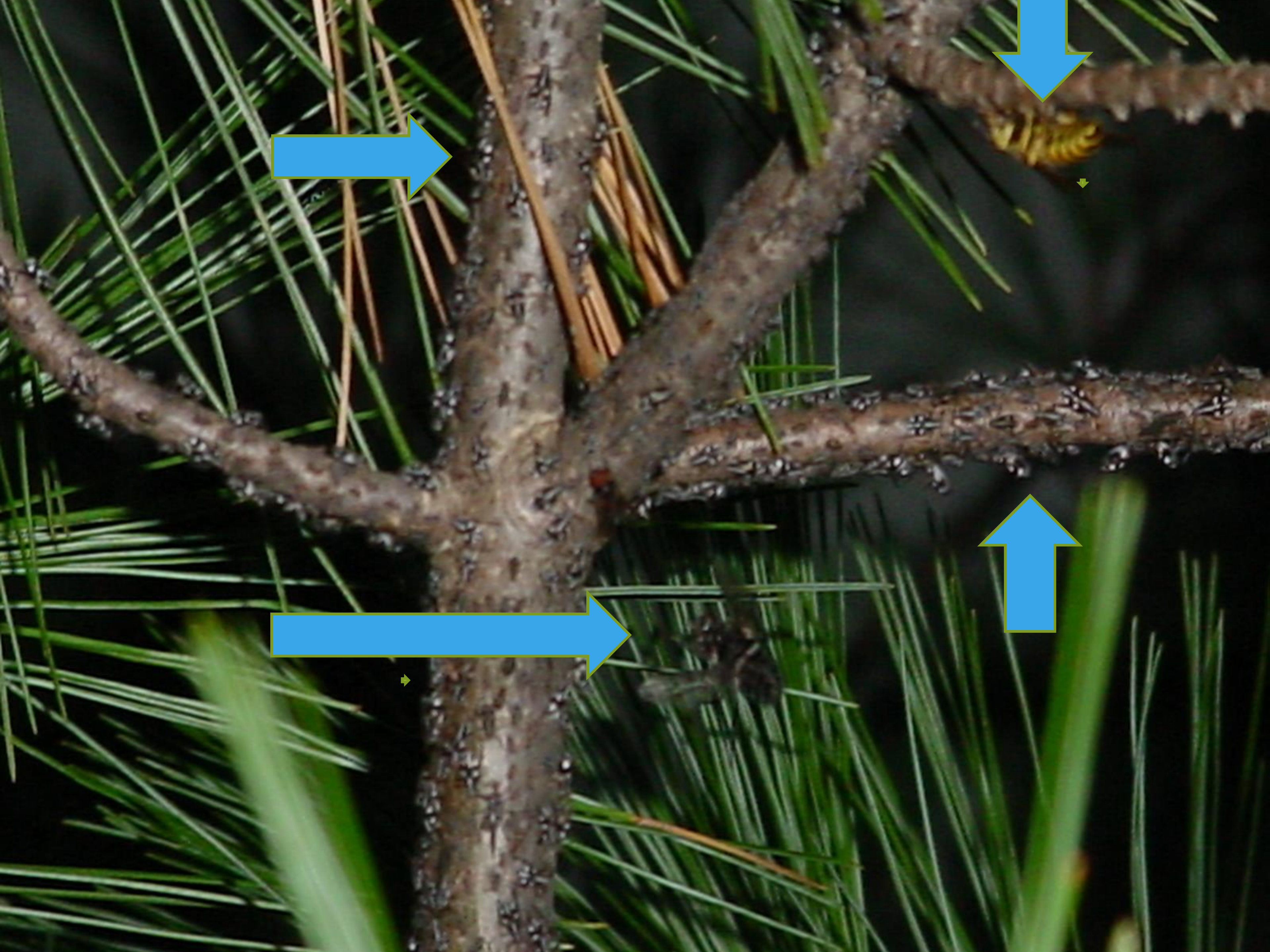




A Quick and unusual story











IPM for Yellow Jackets consists of locating nests early and treating or removing (early spring)








Jar traps have limited uses



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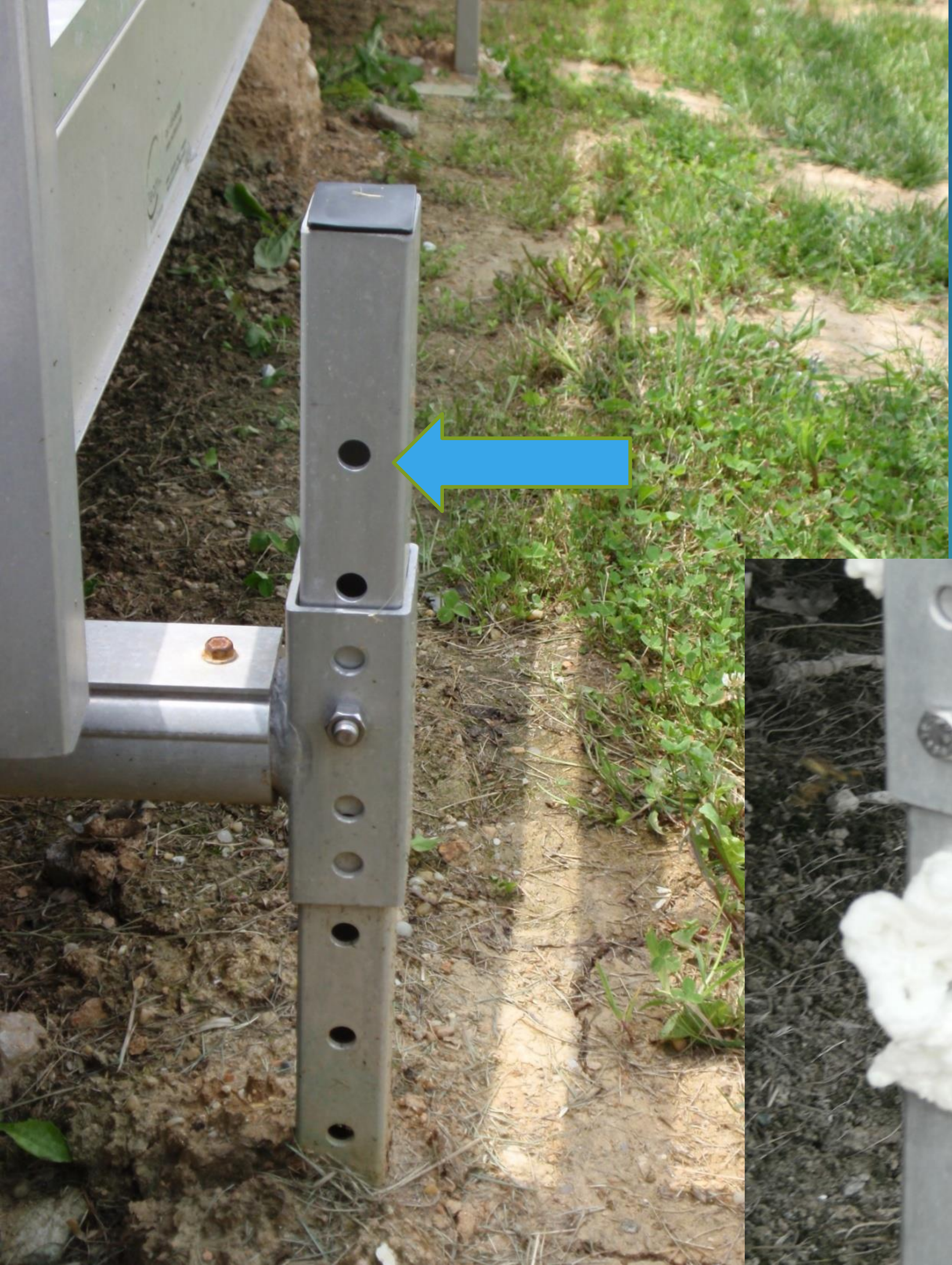
Mark Hardin Photo

Collecting stragglers
or in specific locations like trash dumpsters

Materials for sealing nest entrances








Mark Hardin Photo




NO
PARKING
IN
ACCESS
AISLE

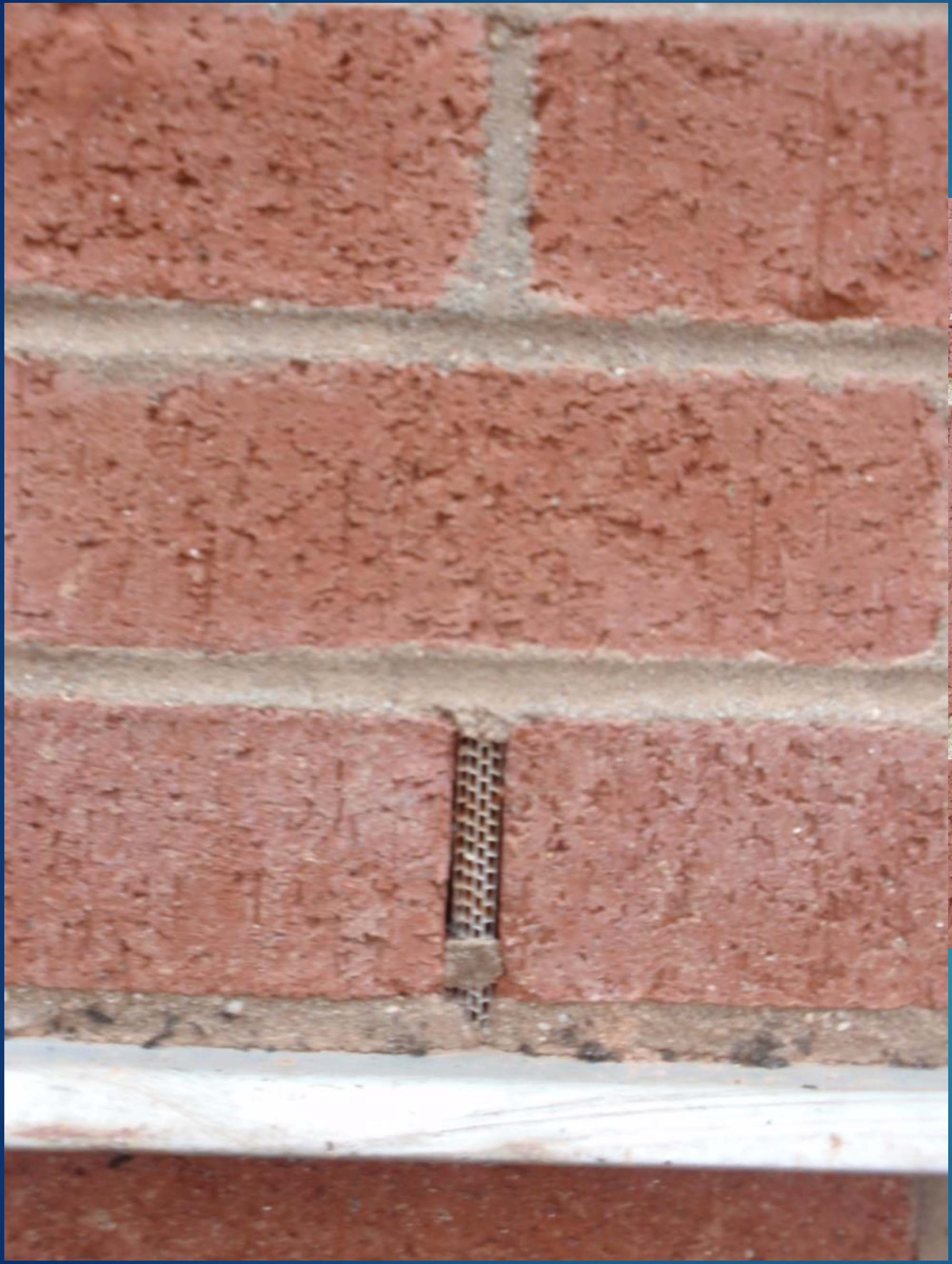









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Avoid Cavity Wall Drainage Problems with
MORTAR NET™
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White
Gray
Almond
Tan
Red
Brown
Maximize the Li and Add to the Beauty of Masonry




Last resort – but necessary



The End



Resources for Stinging Insects

- NYS IPM Program of Cornell University; IPM for Buildings & Schools
- http://www.nysipm.cornell.edu/buildings/default.asp
- Information for ordering the *Wasp and Bee Management* booklet
- http://www.nysipm.cornell.edu/press_rel/wasp_bee.asp

Questions



<u>For More Information</u>

visit - www.epa.gov/managing-pests-schools

contact us - school.ipm@epa.gov

844-EPA-SIPM